THE GENUS *PTERELLA* ROBINEAU-DESVOIDY (DIPTERA: SARCOPHAGIDAE, MILTOGRAMMINAE) OF THE ETHIOPIAN & MADAGASCAN ZOOGEOGRAPHICAL REGIONS[1]

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ABSTRACT: The genus *Pterella* Robineau-Desvoidy from the Ethiopian and Madagascan zoogeographical regions is reviewed with a new key. Two new species are described from these regions.

DESCRIPTORS: Diptera: Sarcophagidae, Miltogramminae: *P. lucida* n.sp., *P. eos* n.sp.

Since Zumpt's review of the *Pterella* species of the Ethiopian zoogeographical region (1961), two more species have been described from that area (Zumpt & Stimie, 1965; and Nesbitt, 1975) and two from Madagascar (Zumpt, 1964). Further two species are described below. A key is included for all known species from both regions. Because 9 of the species are characterized by the structure of the male terminalia only, and because of the great similarity in external features, especially in the "*obscurior*-complex", most of the females cannot be identified.

Key to the Species

1 (2) Abdomen entirely red, with silver pollinose transverse bands on tergites III to V. Frons at tip of ocellar triangle measuring half of eye-length. Female only. 8mm. – Kenya. 1. *P. rubriventris* (Villeneuve)

2 (1) Abdomen predominantly black, sometimes laterally more or less ill-defined reddish 3

3 (4) Parafrontalia with 5-6 pairs of proclinate *fo* bristles. Male terminalia see fig. 1. 4-5mm. – Liberia, Zaire, Angola. . . . . 2. *P. liberiensis* Zumpt

4 (3) Parafrontalia with 2 pairs of proclinate *fo* bristles 5

5 (10) Thorax and abdomen covered with a thick pollinosity, with or without a definite pattern on the abdomen 6

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6 (7) Abdomen with a thick yellow pollinosity, without pattern. Last tergite of male glossy black, that of the female pollinose as the preceding tergites. Male terminalia see Zumpt (1964, p. 52). 5-7 mm. – Madagascar.3. *P. vadoni* (Séguy)

7 (6) Abdomen with a thick olive pollinosity and a pattern of round glossy spots on each tergite 8

8 (9) Glossy spots on abdomen smaller than half the width of each tergite. Paralobi with a bunch of long thick hairs (see Zumpt & Stimie, 1965 p. 16). 5-7 mm. – Lesotho. . . . . 4. *P. stuckenbergi* Zumpt

9 (8) Glossy spots on abdomen longer than half the width of each tergite. Paralobi without long thick hairs (see Zumpt & Stimie, 1965 p. 15). 6mm. – Lesotho, South Africa, South West Africa. . . . . 5. *P. triseriata* Curran

10 (5) Thorax and abdomen with thin olive or grey pollinosity, indefinite pattern changing with incidence of light 11

11 (12) Third antennal segment dark brown. Sternopleural bristles 1:1 Male terminalia see fig. 2. 5-8 mm. – Nigeria, Uganda. Angola, Rhodesia, South Africa, South West Africa. . . . . 6. *P. africana* Curran

12 (11) Third antennal segment yellow or orange. Sternopleural bristles 2:1 (second posterior bristle may be reduced to a long hair): "*obscurior*-complex", not separable on external features 13

13 (18) Paralobi with long thick hairs 14

14 (15) Paralobi with a row of long thick hairs, cerci with a few setae (see Nesbitt, 1975 p. 132). 6-8 mm. – Kenya, Tanzania, Nigeria. . . . . 7. *P. kenyae* Nesbitt

15 (14) Paralobi with a bunch of long thick hairs on a protuberance 16

16 (17) Cerci densely covered with setae, paralobi bifurcate terminally (fig. 3). 6-8 mm. – Mozambique, South West Africa, Kenya. . . . 8. *P.santosdiasi* Zumpt

17 (16) Cerci with a few setae, paralobi merely indented terminally (fig. 4). 5-8 mm. – Angola, Tanzania, South West Africa. . . . . 9. *P. lucida* n.sp.

18 (13) Paralobi without long thick hairs 19

19 (22) Paralobi incised to a greater or lesser degree terminally 20

20 (21) Cerci slender, paralobi curved dorso-ventrally in the distal half (fig. 5). 6-11 mm. – Entire Ethiopian zoogeographical region. 10. *P. obscurior* (Villeneuve)

21 (20) Cerci broader, paralobi not curved thus, narrow distally (see Zumpt, 1961 p. 105). 6-10mm. – South Africa, West and Central Africa.
. . . . 11. *P. angustifrons* (Villeneuve)

22 (19) Paralobi not incised, rounded or pointed terminally 23

23 (24) Paralobi rounded terminally, densely covered with setae on the inner surface, cerci with long hairs (fig. 6). 8mm. – Madagascar. . . . . 12. *P. eos* n.sp.

24 (23) Paralobi pointed terminally, fewer setae, cerci with short slender hairs (see Zumpt, 1964 p. 54). 5-10 mm. – Madagascar. . . . . 13. *P. pan* Zumpt

1. *Pterella rubriventris* (Villeneuve)

Setulia rubriventris Villeneuve, Revue Zool. afr. 3, 1913, p. 41; Curran, Amer. Mus. Novit. 836, p. 3; Zumpt, Proc. R. ent. Soc. Lond. (B) 21, 1952, p. 8.

Pterella rubriventris, Zumpt, Explor. Parc natn. Albert Miss. G.F. de Witte 98, 1961, p. 95.

Mr. A.C. Pont of the British Museum (Natural History) kindly sent the holotype, a female and the only specimen so far recorded. It is in poor condition but appears to be distinct from any of the specimens that we have seen. However, as started above, we have not found features on the females that serve to identify them, and *P. rubriventris* may be the female of a described male species.

Villeneuve's description was brief and a redescription is given:

Female – Eyes bare, facets small. Frons at vertex measuring about ½ of eye-length, widening considerably towards the lunula. Frontal stripe yellow, subparallel, twice as wide as the neighbouring parafrontalium at the tip of the ocellar triangle. Parafrontalia and – facialia yellow with dense yellow pollinosity and microscopic white setae. Ocellar triangle small, *oc* barely distinguishable amongst bristly hairs; *iv, ev* and *f* well developed, 2 *fo* and 13 *paf,* a few bristly hairs on the posterior parafrontalium. Anterior bucca and antennal groove yellow with yellow pollinosity, antennae orange. Third antennal segment twice as long as second (not 3 times, as stated by Villeneuve), arista orange in basal thickened half, becoming dark brown terminally. Posterior bucca and occiput black with dense white pollinosity and fine black setae. Palpi slender, yellow, proboscis dark brown.

Thorax black, tip of scutellum reddish, grey pruinosity leaving undusted three very indistinct longitudinal stripes. Scutum damaged and only the following chaetotaxy discernible: 1 prescutellar *dc* anterior *ph,* 3 *h* (inner one reduced), 2 *n,* 2 *sa, prs,* 2 *pp* and 2 *pst* with a few bristly hairs. Sternopleura with 1 antero-dorsal and 1 postero-dorsal bristles, the latter accompanied by 2 bristly hairs. Only the left wing remaining, hyaline, epaulet yellow-brown, costal spine broken, r_{4+5} with three setae. Thoracic squama white, broad. Only the right mid- and hind-legs remaining, both incomplete. Femora and tarsi black, tibia dark brown.

Abdomen red with white pollinose bands on the anterior half of tergites III-V, rubbed off in places. Tergites III and IV with black vittae on ventral surface.

Length 8 mm.

Collection – British Museum (N.H.), holotype from Muille, Kenya, 14. IX. 1911, leg. R.J. Storoly.

2. *Pterella liberiensis* Zumpt

Pterella liberiensis Zumpt, Explor. Parc natn. Albert Miss. C.F. de Witte 98, 1961, p. 95 fig. 39.

This species was described from 2 males from Liberia showing slightly different shapes of the paralobi. To my knowledge five more males have been collected at Luabo, former Belgian Congo, and at Chianga, Angola.

The hypopygium has been redrawn (fig. 1).

3. *Pterella vadoni* (Séguy)

Setulia vadoni Séguy, Bull. Mus. natn. Hist. nat. (2), 34, 1962, p. 344 fig. 1.
Pterella vadoni, Zumpt, Verh. naturf. Ges. Basel 75, 1964, p. 52 fig. 2.

Widespread over Madagascar.

No further specimens have been recorded since Zumpt's publication.

4. *Pterella stuckenbergi* Zumpt & Stimie

Pterella stuckenbergi Zumpt & Stimie, Ann. Natal Mus. 18, 1965, p. 16 fig. 9.

Based on 3♂♂ and 1♀ from the Maseru district, Lesotho.

No further specimens have been recorded.

5. *Pterella triseriata* Curran

Pterella triseriata Curran, Amer. Mus. Novit. 836, 1936, p. 4; Zumpt, Explor. Parc natn. Albert Miss. G.F. de Witte 98, 1961, p. 97; Zumpt & Stimie, Ann. Natal Mus. 18, 1965, p. 15 fig. 8.

Setulia triseriata, Zumpt, Proc. R. ent. Soc. Lond., (B) 21, 1952, p. 9.

This species has been based on a single female from Bloemfontein, Orange Free State. Zumpt & Stimie described the male sex from Maseru, Lesotho. Since then, further specimens have been seen from Jamestown and the Sandflats, Cape Province; the Drakenberg Mts., Natal; and the Waterberg Reserve and Grootfontein, South West Africa.

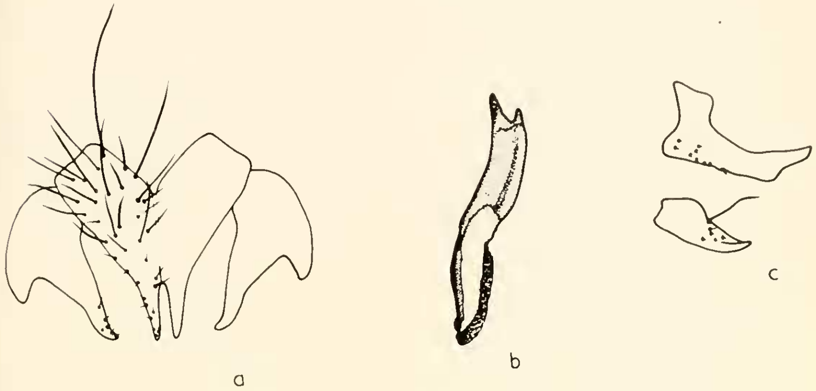

Fig. 1. *Pterella liberiensis* Zumpt a) cerci and paralobi, b) phallosome laterally, c) parameres. Male from Luabo, former Belgian Congo.

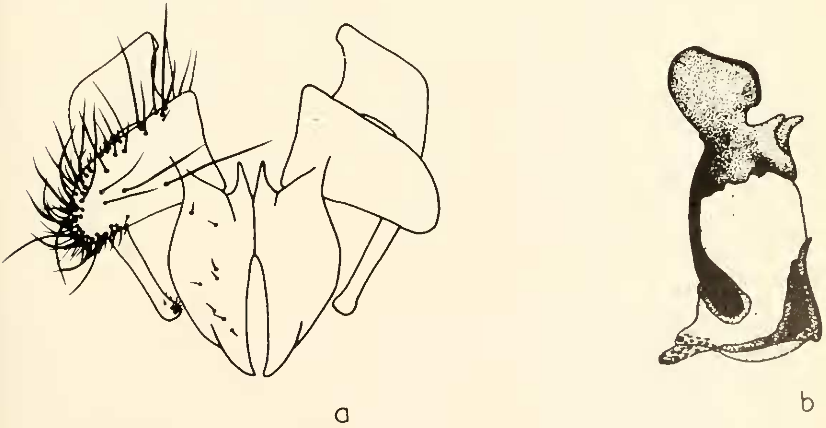

Fig. 2. *Pterella africana* Curran a) cerci with paralobi, b) phallosome laterally. Allotype from Johannesburg, Transvaal.

6. *Pterella africana* Curran

Pterella africana Curran, Amer. Mus. Novit. 836, 1936, p. 4; Zumpt. Explor. Parc natn. Albert Miss. G.F. de Witte 98, 1961, p. 98 fig. 40.
Setulia africana, Zumpt, Proc. R. ent. Soc. Lond. (B) 21, 1952, p. 9.

Zumpt (1961) in his revision of the *Pterella* species had listed one male (allotype) and two females, including the holotype, from the Transvaal. Further 4♀♀ were recorded from the Cape Province and from Rhodesia. Since then, more male and female specimens have been seen from Grahamstown, Cape Province; Warmbad, Transvaal; Rocadas, Angola; Ankole, Uganda; and Usakos and Gobabis, South West Africa.

7. *Pterella kenyae* Nesbitt

Pterella kenyae Nesbitt, Pan. – Pacif. Entomologist 51, 1975, p. 131 fig. 2.

This species was only recently described and based on 4♂♂ from Diani Beach, Kenya, and 3♂♂ from the Kilifi district, Kenya. Further males have now been received from Archer's Post, Kenya; Singida, Tanzania; and Ile-Ife, Nigeria.

8. *Pterella santosdiasi* Zumpt

Pterella santosdiasi Zumpt, Explor. Parc natn. Albert Miss. G.F. de Witte 98, 1961, p. 101 fig. 41.

Described from the island of Inhaca, Mozambique, further male specimens have been received from the Nduma Nature Reserve, Natal: Tsumeb, South West Africa; and Archer's Post as well as Diani Beach, Kenya. The hypopygium has been drawn (fig. 3).

9. *Pterella lucida* n.sp.

Amongst the material sent to me by Mr. A.C. Pont, there are 15 males belonging to this new species collected by the British Museum Expedition 1972, in Angola and South West Africa. There is another male from Tanzania in the collection of the California Academy of Sciences. They fall within the "*obscurior*-complex" and are only distinguishable by the terminalia. It is remarkable that so many specimens of a new species have been collected from different localities.

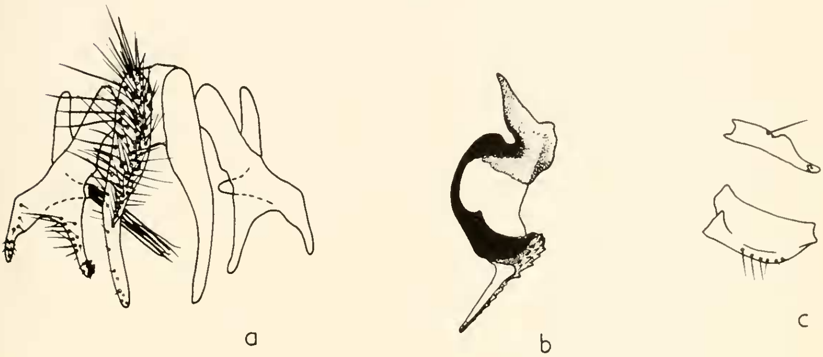

Fig. 3. *Pterella santosdiasi* Zumpt a) cerci with paralobi, b) phallosome laterally, c) parameres. Holotype from Inhaca Island, Mozambique.

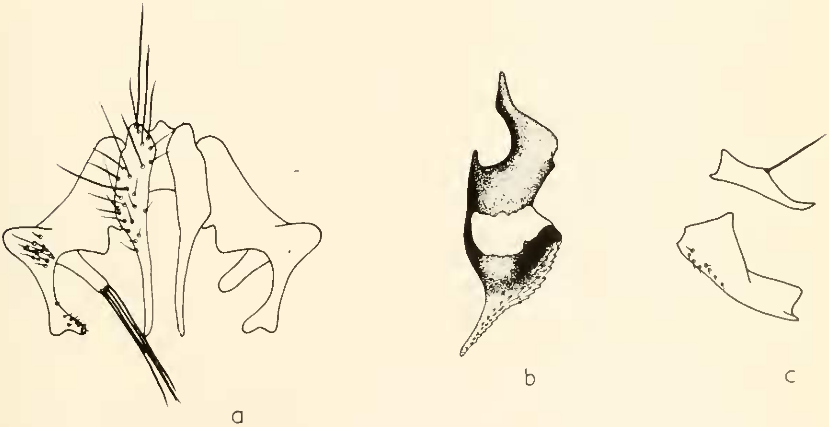

Fig. 4. *Pterella lucida* n. sp. a) cerci and paralobi, b) phallosome laterllay, c) parameres. Holotype from Rocadas, Angola.

Male – Eyes bare, facets small. Frons at the narrowest part measuring about 1/3 of eye-length. Frontal stripe orange, subparallel but widening at the vertex, in the middle about as wide as the neighbouring parafrontalium. Parafrontalia and – facialia orange, blackened posteriorly, white pollinosity and microscopic white setae. Chaetotaxy: *oc* with several bristly hairs, *iv, ev,* 2 proclinate *fo,* 12 *paf.* Antennal groove orange with dense white pollinosity, antennae orange, third segment 3 to 3-1/2 times as long as second. Arista brown, thickened in basal two-thirds. Anterior bucca orange as the parafacialia, posterior bucca black with white pollinosity and black setae. Palpi yellow, slender, proboscis black.

Thorax black with thin grey pruinosity leaving 3 or 5 narrow undusted stripes which are not distinct. Only 1 prescutal *ac* and 2 prescutal *dc* distinct from the long hairs, *ia* = 0+1, *prs,* 3 *h,* 2 *sa,* 2 *n* and *sc* = 3+1. Pleura black with white pruinosity and long black hairs. 1 *pst* and 2 or 3 *pp* both accompanied by well developed hairs, *st* = 1:2. Wings hyaline, epaulet black, basicosta yellow, veins yellow to brown, costal spine short vein r_{4+5} with a few dorsal setae. Thoracic squama broad, halter yellow. Legs black, fore-tibia with 1 dorsal and 1 posterior bristle and a short row of ventral bristles lying close to the leg, mid-tibia with 1 submedial *ad* and *av,* and 1 or 2 short *pd,* hind-tibia with a row of short *ad* terminating in a longer submedial *ad,* 3-6 *av.*

Abdomen black, only a very narrow transverse band of silver pollinosity on the anterior of tergites III-V. Phallosome typical of the "*obscurior*-complex", cerci narrow, paralobi with slightly indented terminal end and 4 long well developed hairs on a slender protuberance from the middle (fig. 4).

Length: 5-8 mm.

Female – There are a number of females from the typical localities before me. So far, however, it is not possible to assign them with certainty to this species.

Collection – British Museum (Natural History). Holotype and 3 paratypes from Rocadas, Angola, 19-22. II. 1972; 3 paratypes from Rio Longa 4 miles south of Lussusso, Angola, 8. III. 1972, and 1 paratype from Tsumeb, South West Africa, 17. II. 1972. All collected by the British Museum Southern African Expedition 1972.

Collection – California Academy of Sciences, San Francisco. 1 paratype from Singida, Tanzania, 26. I. 1970, leg. M.E. Irwin and E.S. Ross.

Collection – South African Institute for Medical Research, Johannesburg. 4 paratypes from Rocadas, Angola, 19-22. II. 1972 and 2 paratypes from Rio Longa 4 miles south of Lussusso, 8. III. 1972 all collected by the British Museum Expedition 1972.

10. *Pterella obscurior* (Villeneuve)

Setulia fasciata var. obscurior Villeneuve, Ann. S. Afr. Mus. 15, 1916, p. 509.

Theromyia obscurior, Rohdendorf, Bull Soc. ent. Egypte 18, 1934, p. 14; Rohdendorf, Lindner Fliegen pal. Reg. 64 h, 1935, p. 78.

Setulia obscurior, Zumpt, Proc. R. ent. Soc. Lond. (B) 21, 1952, p. 9 fig. 3.

Pterella obscurior, Zumpt, Explor. Parc natn. Albert Miss. G.F. de Witte 98, 1961, p. 101 fig. 42.

Zumpt (1961) redescribed the species. There are a number of specimens in the collections and the range of the species is Africa south of the Sahara. Fig. 5 is a redrawing of the hypopygium of the lectotype from Pretoria, South Africa.

11. *Pterella angustifrons* (Villeneuve)

Setulia fasciata var. angustifrons Villeneuve, Ann. S. Afr. Mus. 15, 1916, p. 509.
Setulia angustifrons, Zumpt, Proc. R. ent. Soc. Lond. (B) 21, 1952, p. 9.
Pterella angustifrons, Zumpt, Explor. Parc natn. Albert Miss. G.F. de Witte 98, 1961, p. 104 fig. 42.

Further specimens have been recorded from South Africa, Zaire, Nigeria and East Africa. The range overlaps with that of *P. obscurior.*

12. *Pterella eos* n.sp.

There are three males of this new species collected by Dr. F. Kaiser from Madagascar in the collection of the S.A.I.M.R. They fall within the range of variability shown in the "*obscurior*-complex", but they are easily identified on their hypopygial structure.

Male – Eyes bare, facets small, inner ones slightly larger. Frons at vertex measuring 1/3 (in holotype) to 2/5 of eye-length, narrowing slightly towards the lunula. Frontal stripe orange in holotype, and reddish-brown darkened in the middle in paratypes. At the tip of the ocellar triangle the frontal stripe is 2½ - 3 times as wide as the neighbouring parafrontalium. Parafronalia and – facialia yellow with dense white pollinosity depending on the incidence of light, sparsely scattered with fine white setae. Chaetotaxy: *oc* barely distinguishable from several bristly hairs, *iv, ev* and *f* well developed. Two pairs of stout *fo* accompanied by several smaller bristles, 13-14 *paf* irregularly arranged. Antennal groove yellow with dense white pollinosity, antennae orange, third segment 3 times as long as second. Arista dark brown, thickened in basal two-thirds. Vibrissae distinctly separated from peristomal bristles. Bucca black with white pruinosity and short black setae. Palpi slender, yellow, proboscis black.

Thorax black, reddish-grey pruinosity leaving narrow longitudinal undusted stripes visible under certain incidences of light. Chaetotaxy reduced, only prescutal *ac,* 2 prescutal *dc* and 1 *ia* visible amongst the long hairs. *Prs,* 3 *h,* 2 *n,* 3 *sa* well developed, *sc* = 3+1, 1 *pst* and 3 *pp.* Meso- and sternopleura densely beset with long hairs and bristles, *st* = 1:2. Wings hyaline, epaulet black, veins brown, costal spine short, base of r_{4+5} with a few short setae on the dorsal surface. Thoracis squama pale yellow, broad, halter yellow. Legs black, femora with thin grey pruinosity. Fore-tibia with 1 dorsal bristle distally, 1 *pd* and 4 ventral bristles, mid-tibia with a well developed *ad* and *av* each accompanied by smaller bristles, 1 medial *pd* and 2 short *pv,* hind-tibia with a row of *ad,* a row of *pd,* 2 thick and 3 or 4 thinner *av.*

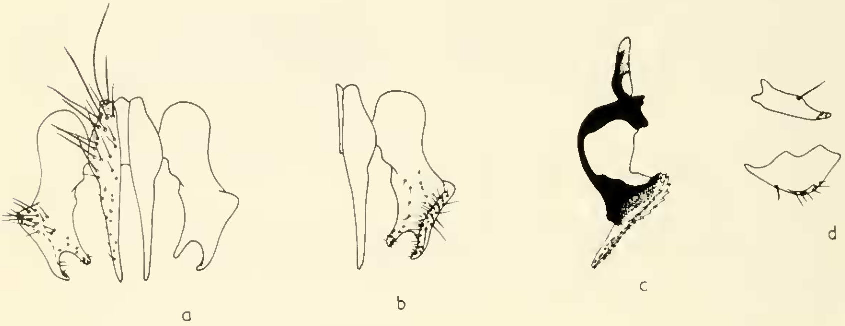

Fig. 5. *Pterella obscurior* (Villeneuve) a) cerci and paralobi, dorsal view, b) cercus and paralobus, ventral view, c) phallosome laterally, d) parameres. Lectotype from Pretoria, Transvaal.

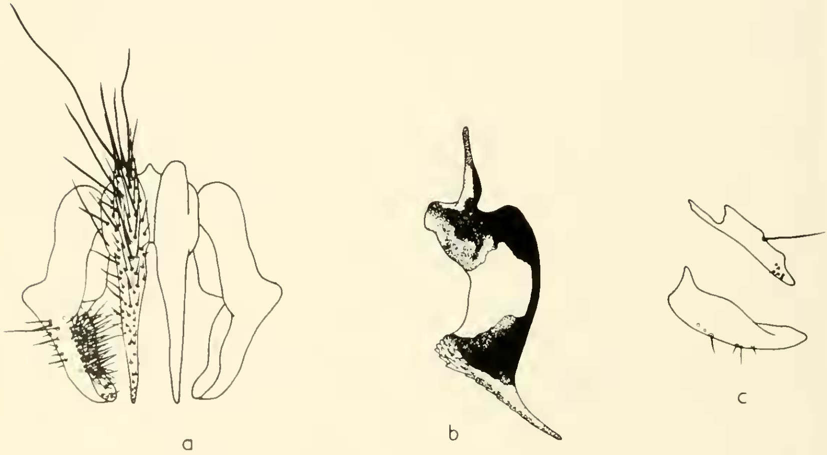

Fig. 6. *Pterella eos* n. sp. a) cerci with paralobi, b) phallosome laterally, c) parameres. Paratype from Perinet, Madagascar.

Abdomen longer than broad, reddish-brown, tergites I+II darkened, indistinct narrow dark brown vittae on tergites III and IV. Dense pale yellow pollinosity forming uneven transverse bands on the anterior margins of tergites III-V. Cerci slender, paralobi rounded terminally and densely covered with setae; phallosome typical of the "*obscurior*-complex" (fig. 6).

Length: 8 mm.

Female – unknown

Collection – South African Institute for Medical Research, Johannesburg. Holotype from Ankarafantsika, Majunga Province, Madagascar, 18. VI. 1958, and 2 paratypes from Périnet, Tamatave Province, Madagascar, 2. X. 1958 and 5. X. 1958, all collected by F. Kaiser.

13. *Pterella pan* Zumpt

Pterella pan Zumpt, Verh. naturf. Ges. Basel 75, 1964, p. 53 fig. 3.

Described from Madagascar, where this species has a wide distribution. No further species have been reported since Zumpt's description.

ACKNOWLEDGEMENTS

I wish to thank Dr. P.H. Arnaud, Jr., California Academy of Sciences and Mr. A.C. Pont, British Museum (Natural History) for entrusting me with the study of Miltogramminae from their collections, and for presenting specimens to the South African Institute for Medical Research, Professor F. Zumpt, Head of the Department of Entomology, for assisting me in the preparation of this paper, and Prof. J.F. Murray, Director of the South African Institute for Medical Research, for providing the necessary research facilities.

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